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TEMPERATURE AND SALINITY MEASUREMENTS AT THE SALMONID DEMONSTRATION AND DEVELOPMENT FARM, L'ETANG INLET, N.B. DURING THE PERIOD 1986 - 1991

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1992

Canadian Data Report of
Hydrography and Ocean Sciences
No. 115

Fisheries and Oceans Pêches et Océans

Canada

Canadian Data Report Of Hydrography and Ocean Sciences

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Les établissements des Sciences et levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports en décembre 1981. Une liste complète de ces publications figure dans le volume 39, Index des publications 1982, du *Journal canadien des sciences halieutiques et aquatiques*. La série actuelle a commencé avec la publication du rapport numéro 1 en janvier 1982.

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93-01608/

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Cat. No. FS 97-16/115E ISSN 0711-6721

Correct citation for this publication:

Trites, R.W.,and L. Petrie. 1992. Temperature and salinity measurements at the Salmonid Demonstration and Development Farm, L'Etang Inlet, N.B. during the period 1986-1991. Can. Data Rep. Hydrogr. Ocean Sci. 115: iii + 24 pp.

Abstract

Trites, R.W. and L. Petrie. 1992. Temperature and salinity measurements at the Salmonid Demonstration and Development Farm, L'Etang, N.B., during the period 1986-1991. Can. Data Rep. Hydrogr. Ocean Sci. 115: iii + 24 pp.

Daily temperature and salinity measurements, taken at the Salmonid Demonstration and Development Farm in the L'Etang Inlet of New Brunswick, are analyzed and summarized in graphical and tabular form.

Résumé

Trites, R.W. and L. Petrie. 1992. Temperature and salinity measurements at the Salmonid Demonstration and Development Farm, L'Etang, N.B., during the period 1986-1991. Can. Data Rep. Hydrogr. Ocean Sci. 115: iii + 24 pp.

On analyse et résume ici sous forme de tableaux et de graphiques les mesures quotidiennes de température et de salinité prises à la Ferme de démonstration et de développement du saumon de l'Atlantique, située dans le bras Letang, au Nouveau-Brunswick.

Introduction

The Atlantic Salmon Demonstration and Development Farm (SDDF), operated by the New Brunswick Salmon Growers Association, is a facility dedicated to research and development of salmon aquaculture. The farm, located in L'Etang Inlet, New Brunswick, initiated a program of daily measurements of temperature and salinity in May, 1986. Until April, 1989, the farm was located in Lime Kiln Bay at 43°03'36"N, 66°49'27"W. At this time the farm was relocated at 45°03'16"N, 66°49'05"W, approximately 700 m. to the south-south-east (Fig. 1). This report provides plots of the daily, weekly and monthly temperatures and salinities, as well as a table of monthly means for each month over the 1986-91 period.

Methods and Measurement Schedule

Measurements were normally taken daily between 0800-1000 hours, local time. From January 1990, measurements were not taken on Sundays. Salinity measurements were discontinued in April, 1989. Measurements were made with a Yellow Springs Instrument (YSI) and generally read to the nearest 0.1°C and 0.1. Temperature accuracy is reported to be ±0.5°C, and salinity as ±2% of scale.

Data Presentation

Plots of daily, weekly and monthly temperatures and salinities are shown respectively in Figs. 2 to 9 and Figs. 11 to 16. Mean monthly temperatures and salinities for the period of record are shown respectively in Figs. 10 and 17. Table I provides a listing of monthly temperatures and salinities as well as the mean monthly values over the period of record.

The salinity data are of limited use, and caution is advised when using them. Unfortunately, erroneous results occur if the electrodes become fouled or dirty. Sometimes this can occur suddenly, but more often there is a gradual buildup which leads to a trend to lowered values. This was noted on a number of occasions

by the observer when a sudden increase in salinity occurred after cleaning the electrodes. Particularly good examples of this are seen in the 1987 daily salinity plot, where a gradual decline in measured salinity occurred followed by a sudden rise following probe cleaning (e.g. Fig. 12, July 22 and Sept. 12, 1987). Similarly, the downward trend during June and July 1986 (Fig. 11) was probably not real. Following cleaning of the probe on July 14, the measured salinity increased by 4.6.

Alaising is also present in the records, owing to the variations that occur over a semi-diurnal tidal cycle. Because sampling was taken only once per day and at about the same time each day, a 15-day spring-neap cycle will appear in the record. Variation in temperatures over a semi-diurnal tidal cycle, tends to be larger during the summer months, thus producing maximum biasing in the record at this time (e.g. see May-Sept. 1989, Fig 5).

Acknowledgements

We thank the New Brunswick Salmon Growers Association for making the data available, Leslie Mantin of Evans Computer Applications Ltd. for data compilation and K. Drinkwater and G. Harding.

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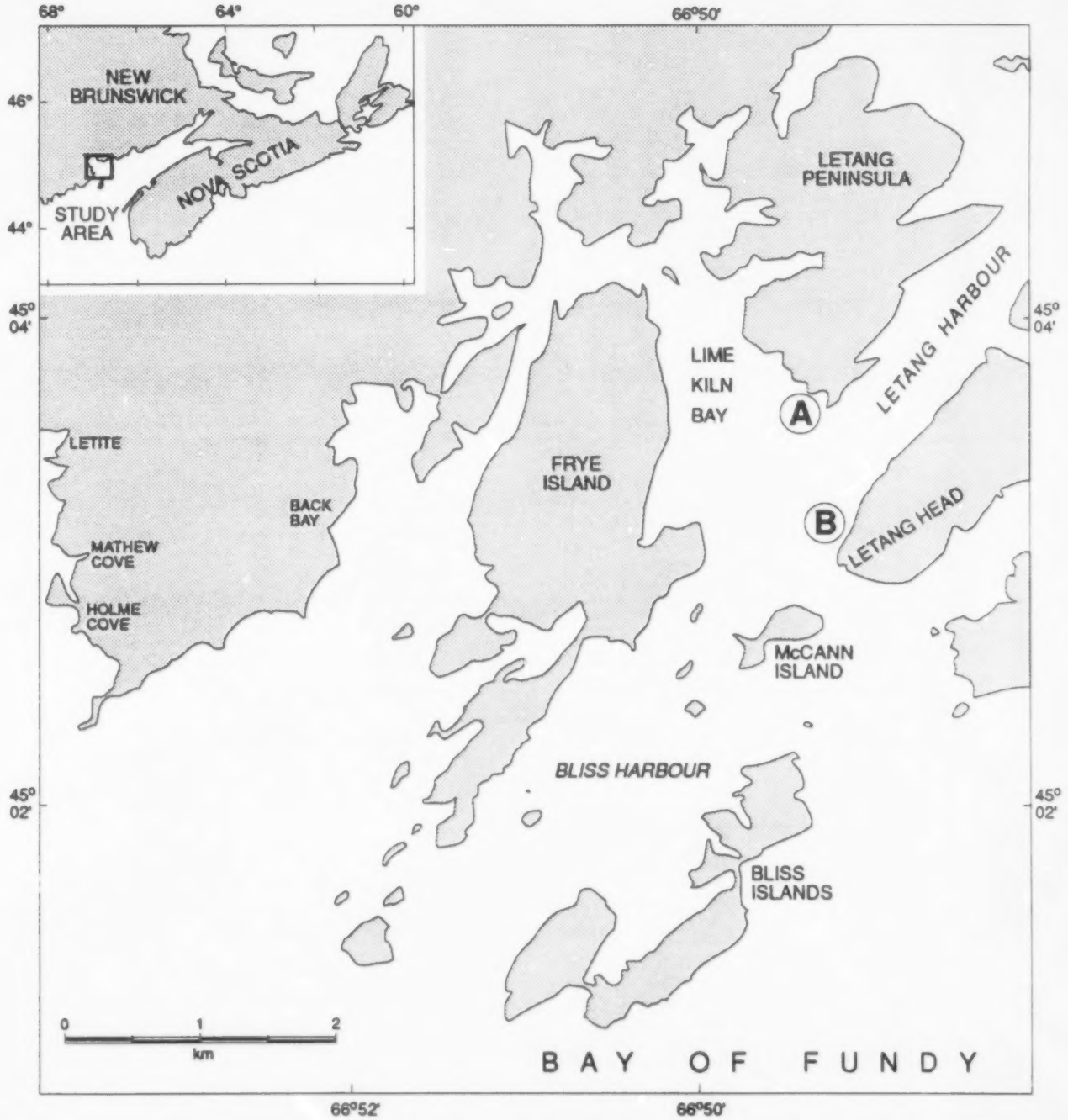

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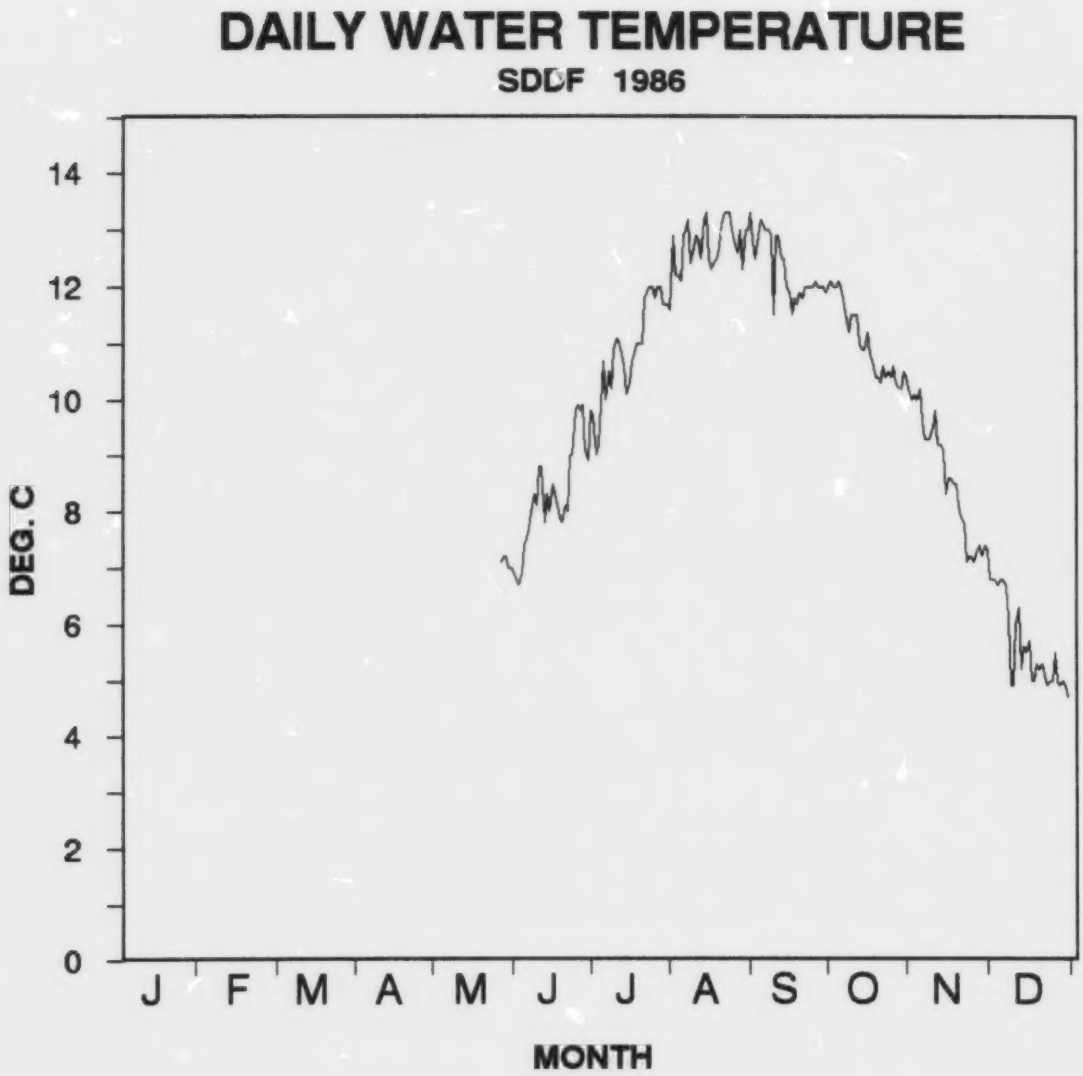

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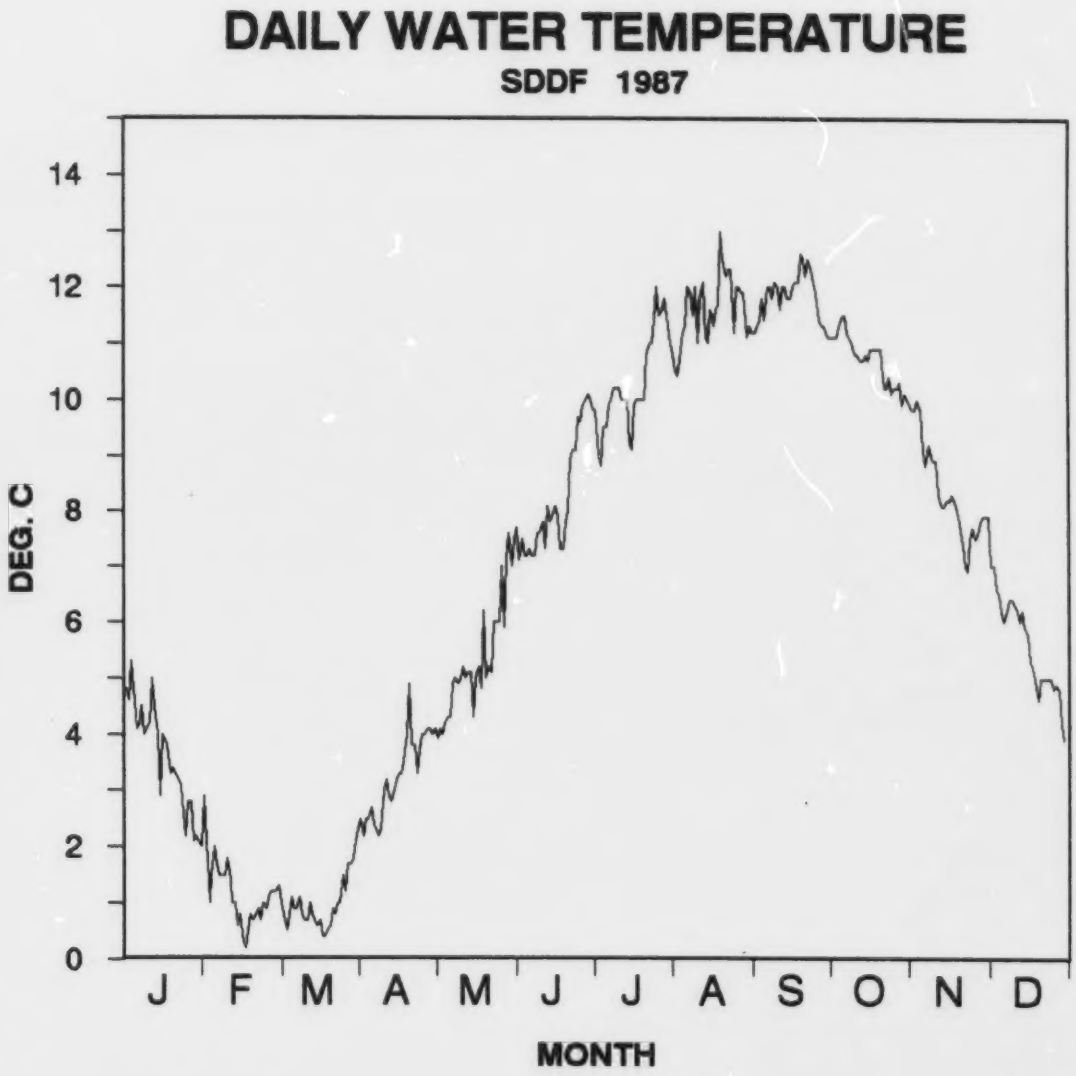

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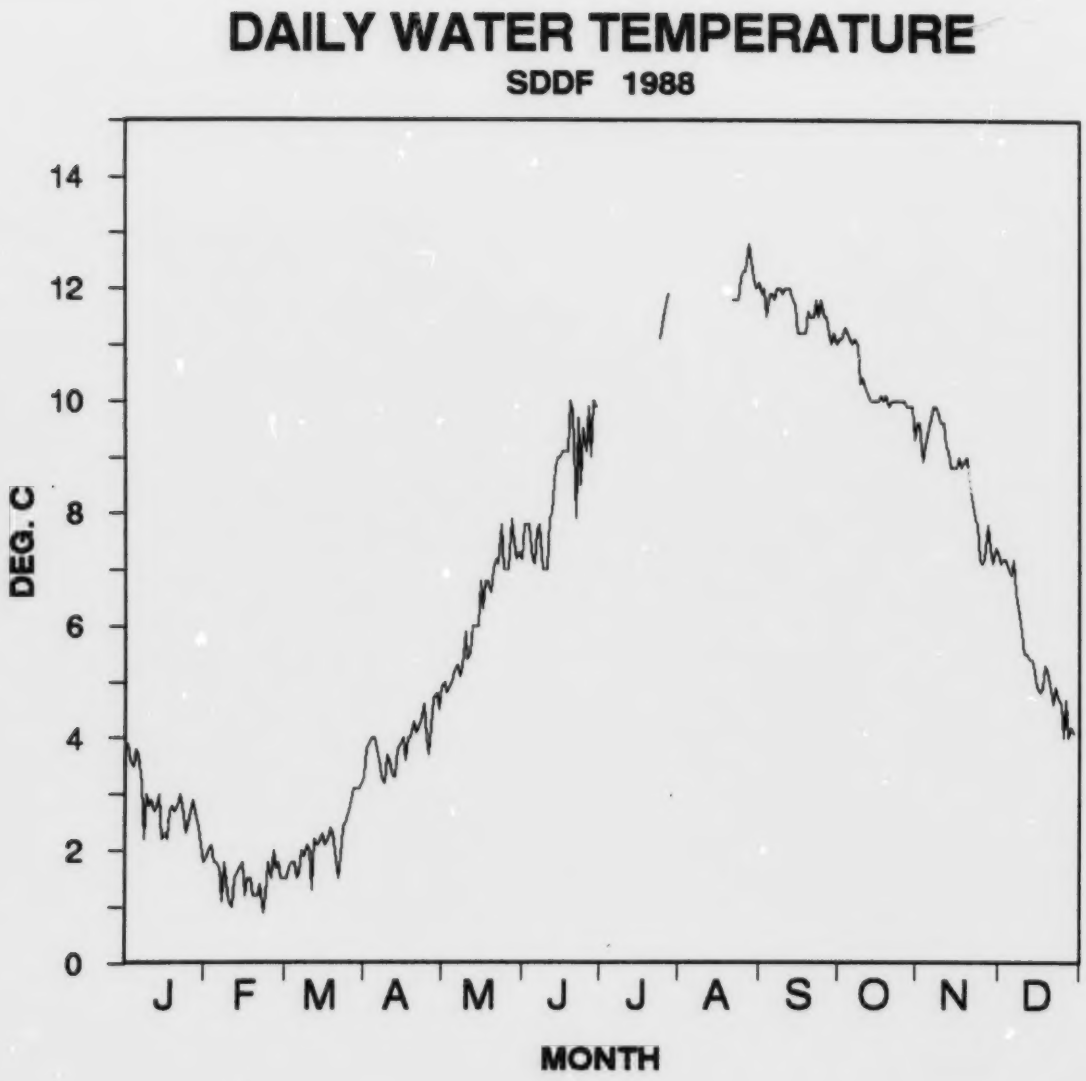

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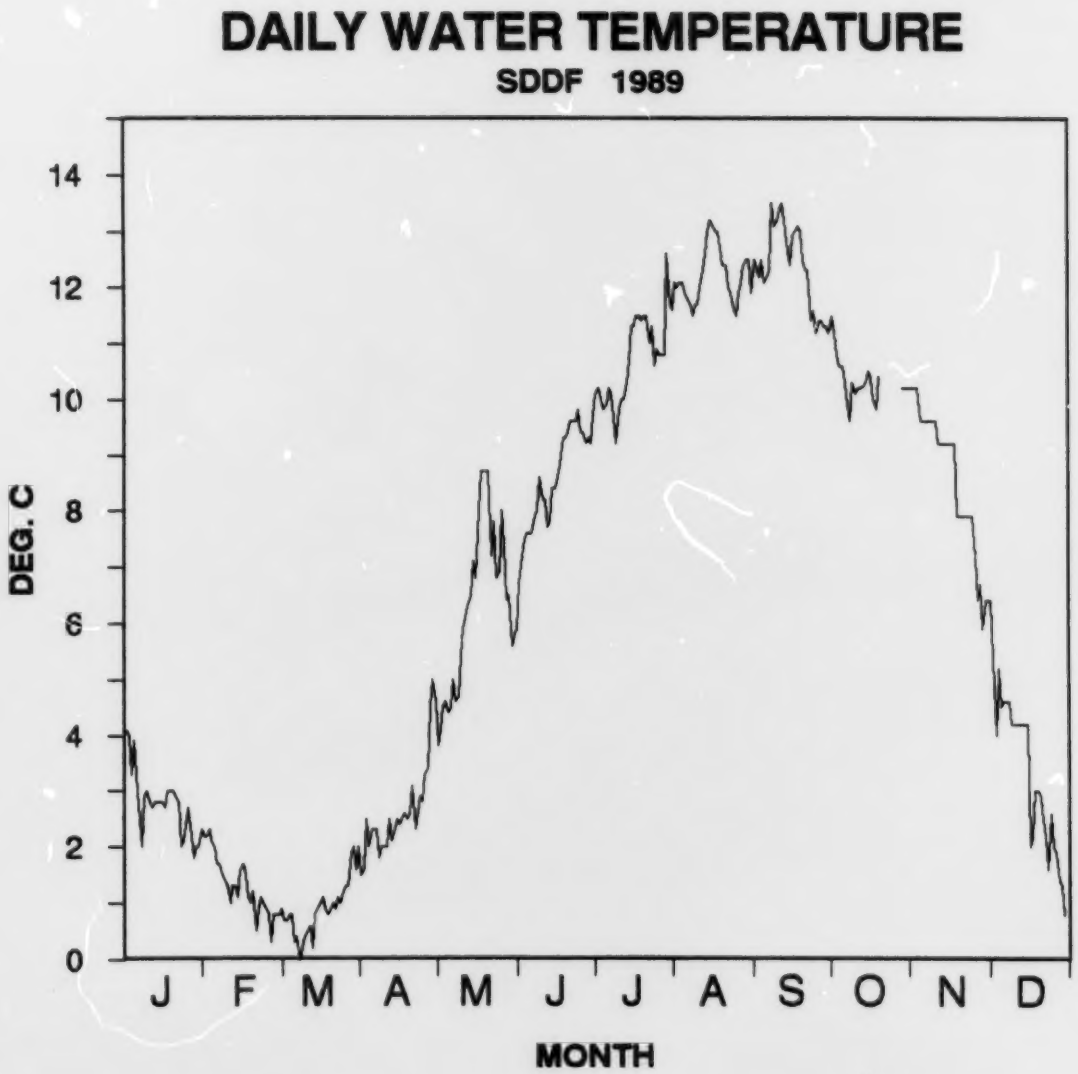

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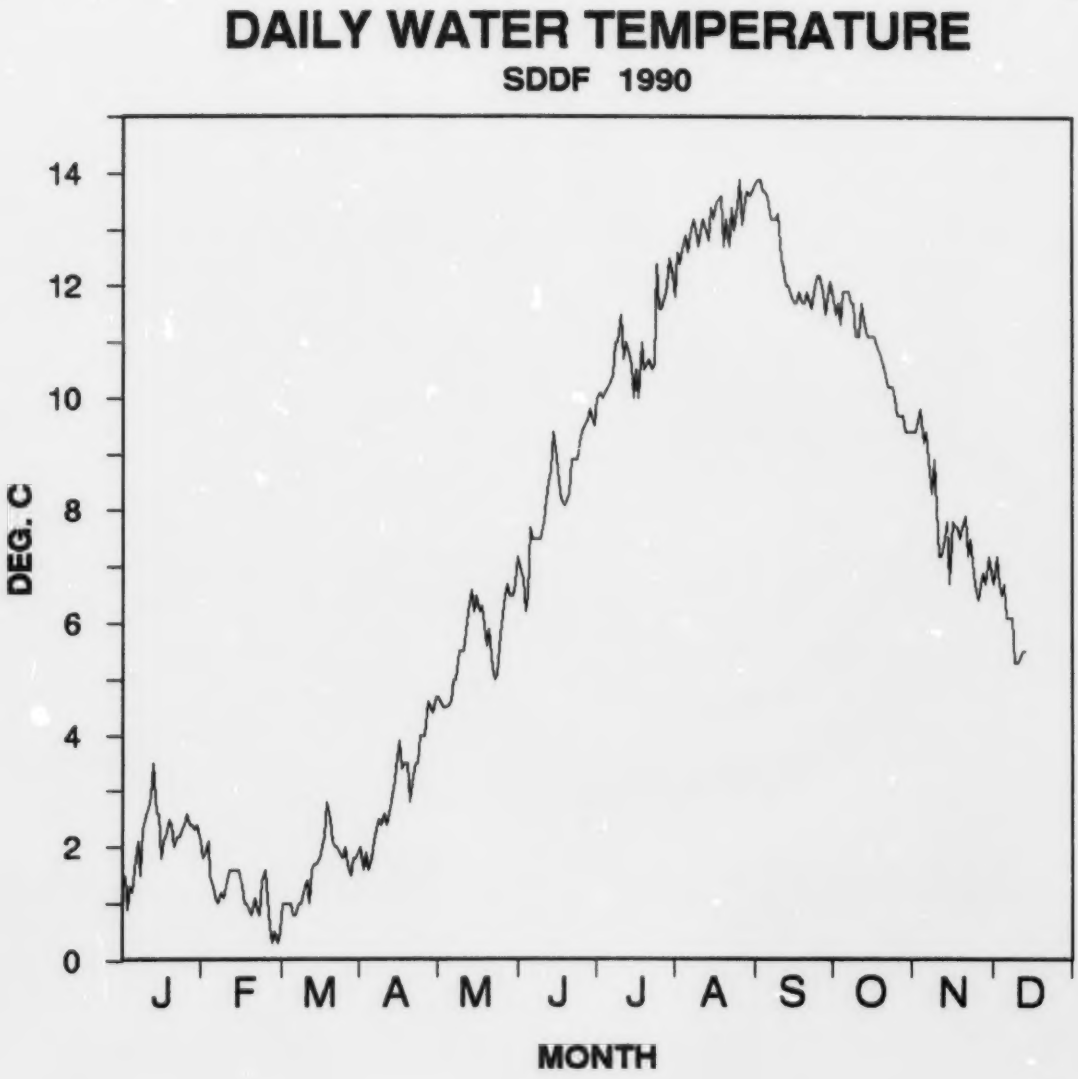

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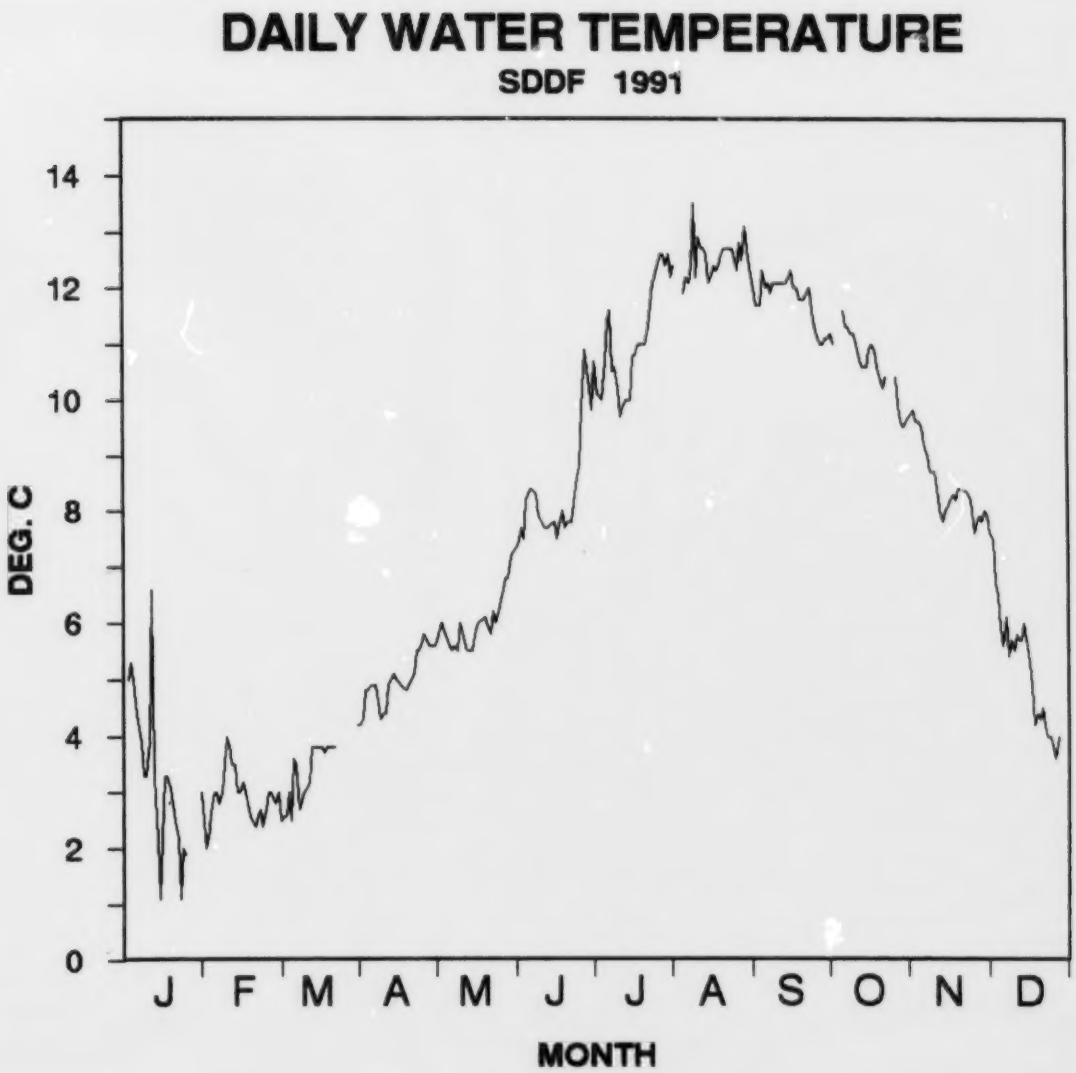

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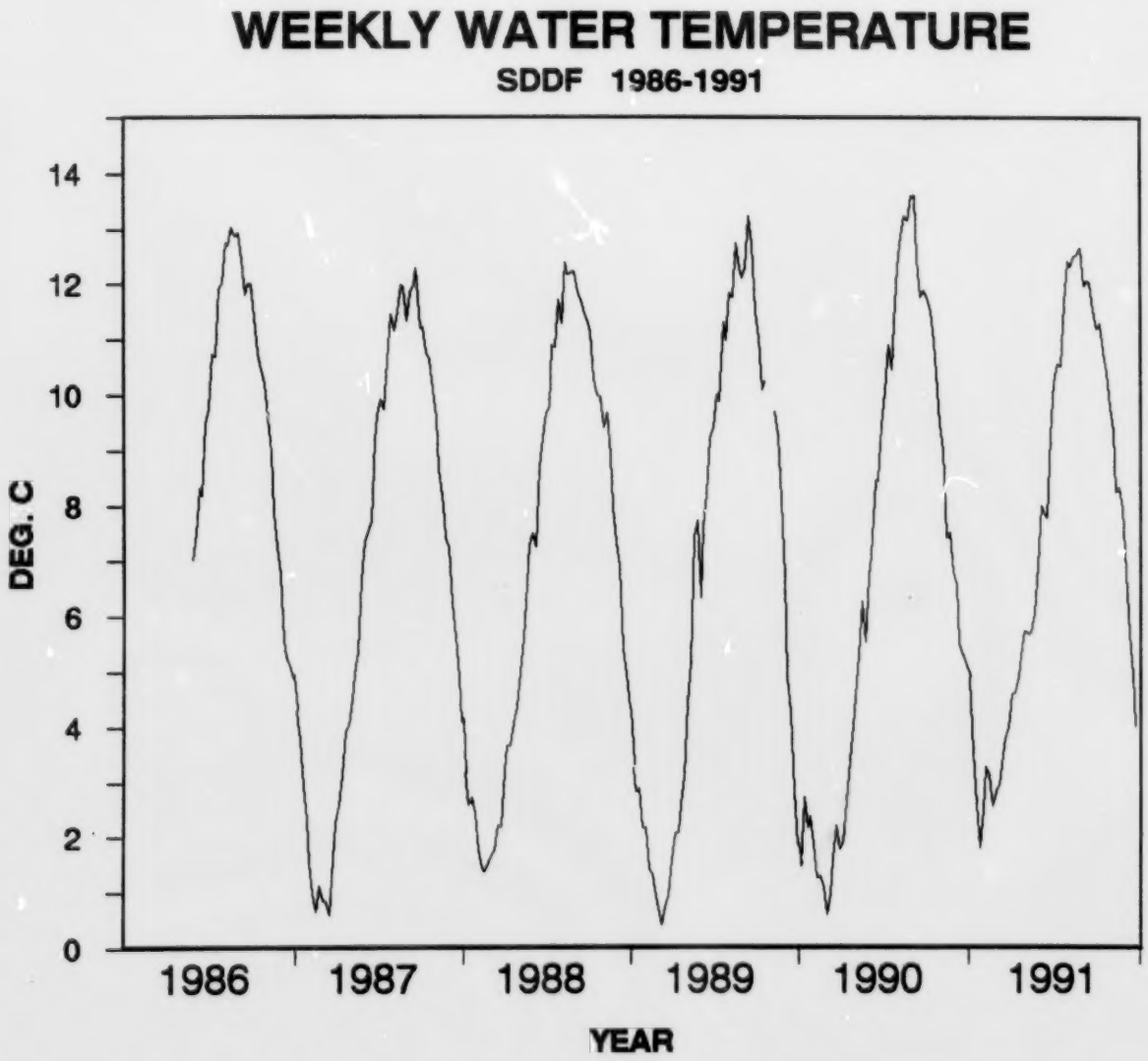

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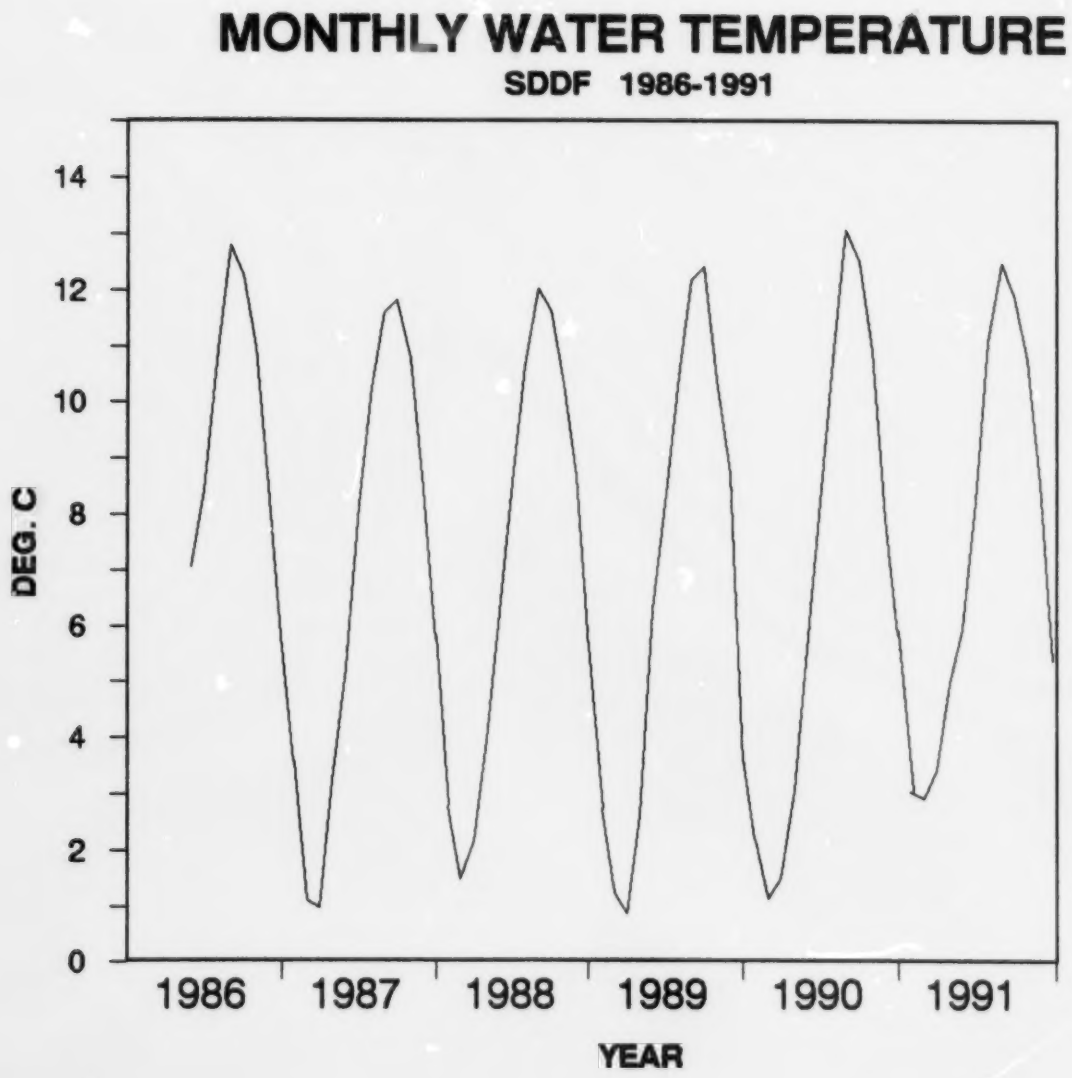

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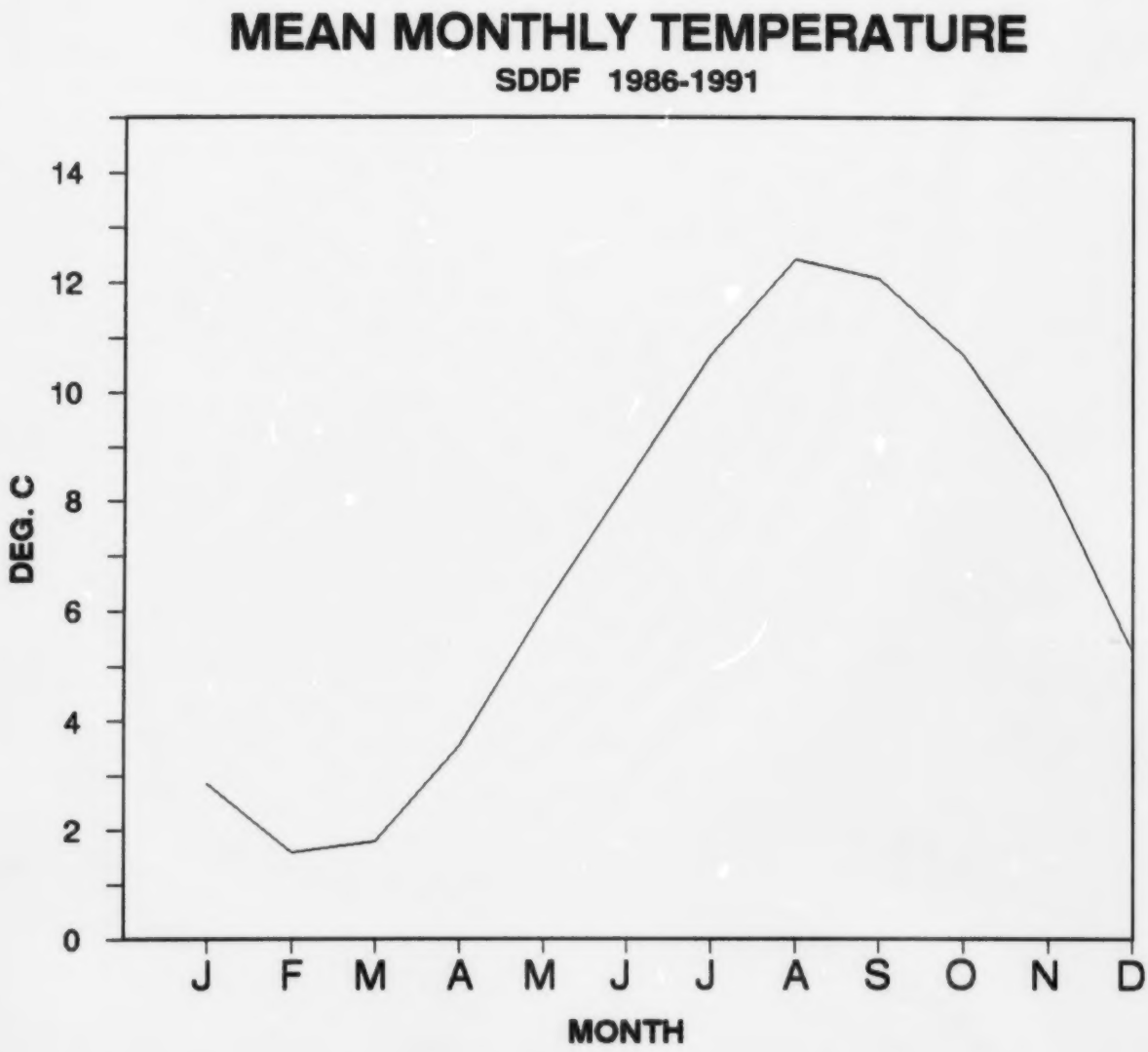

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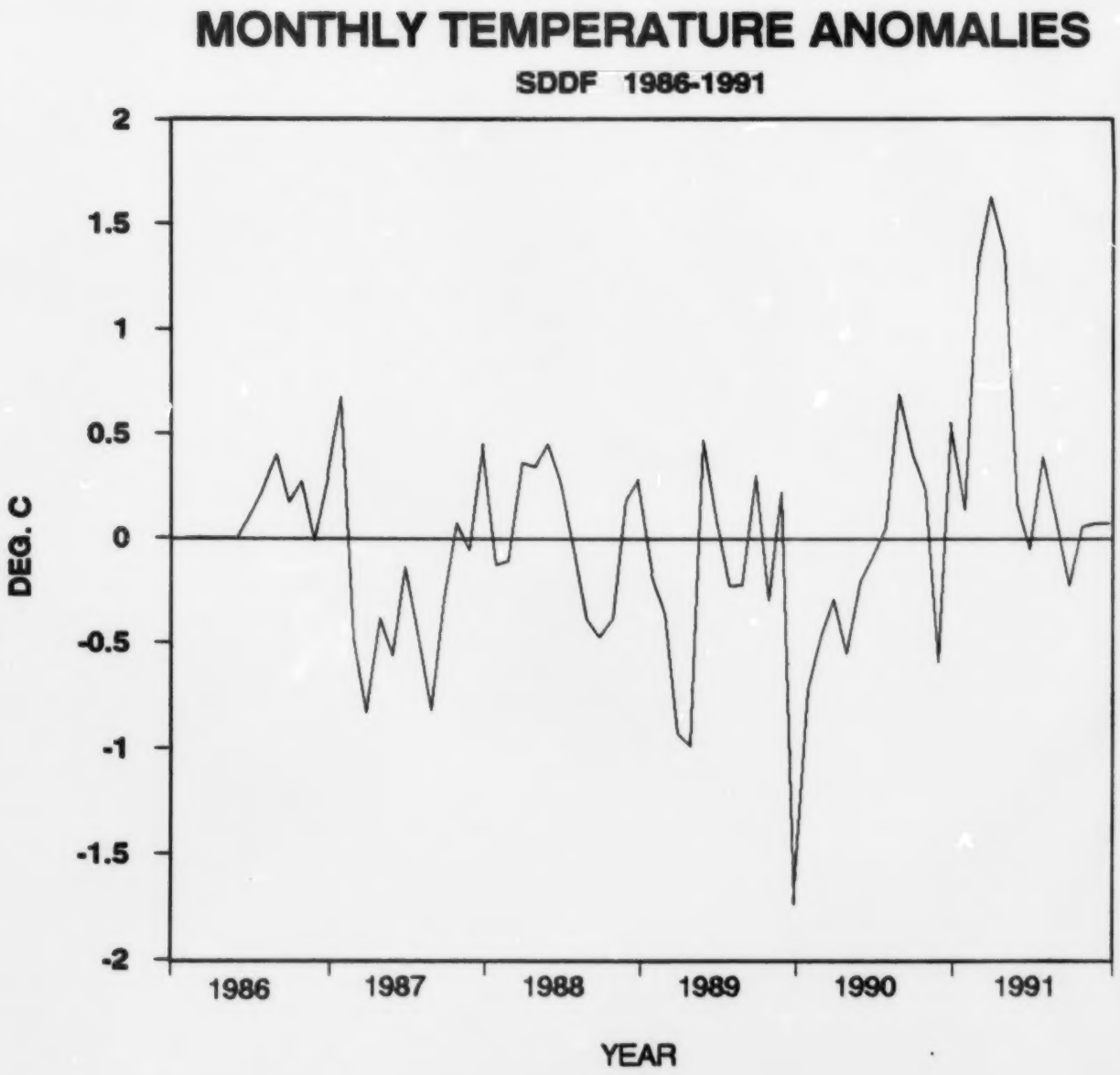

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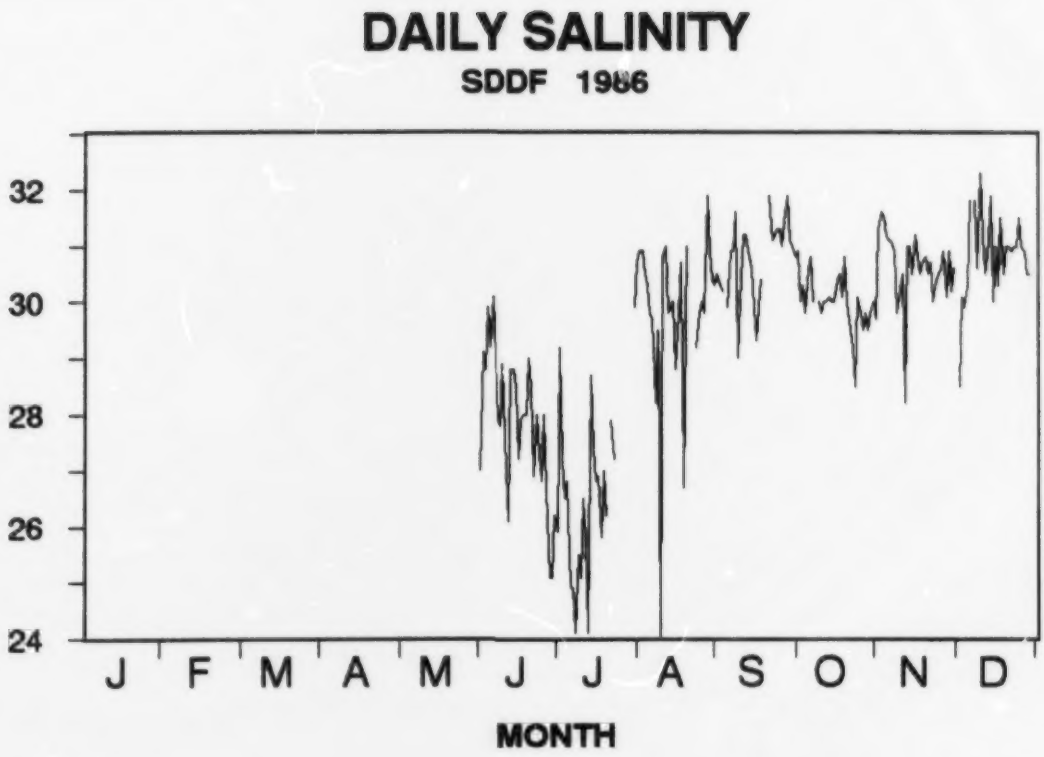

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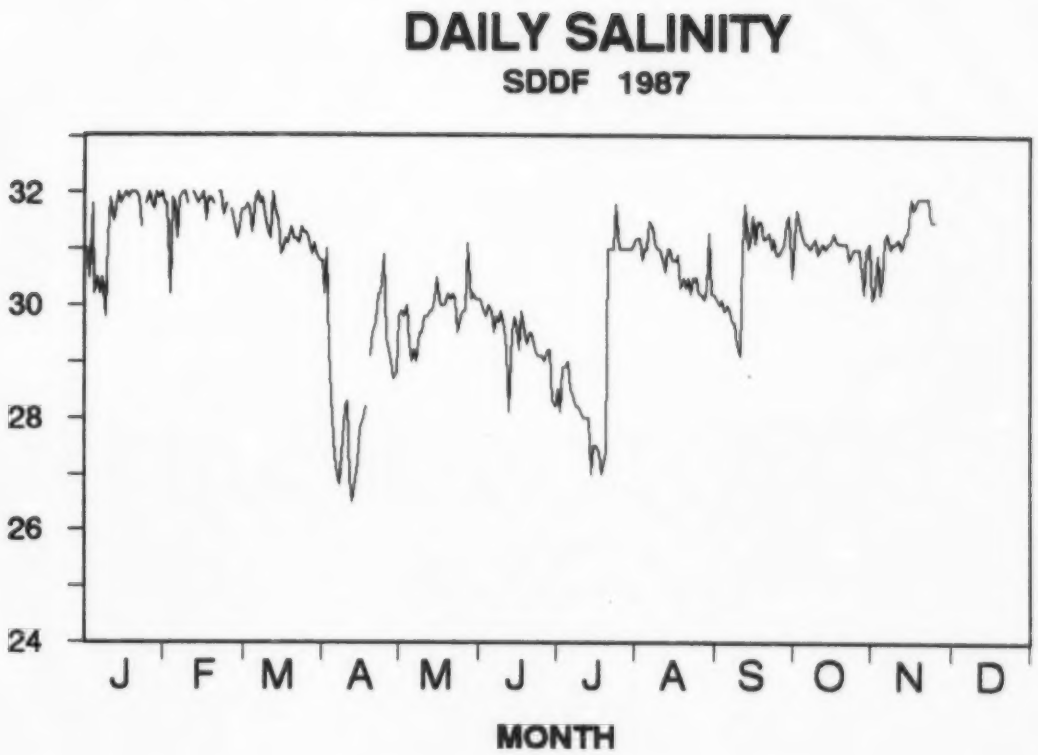

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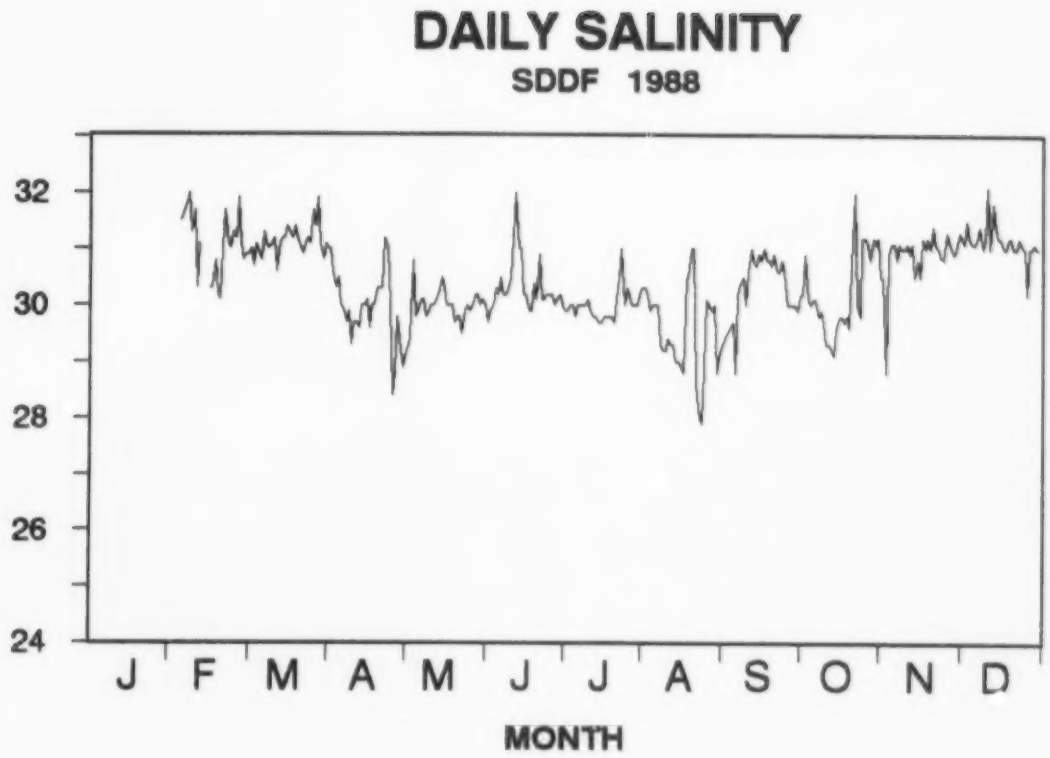

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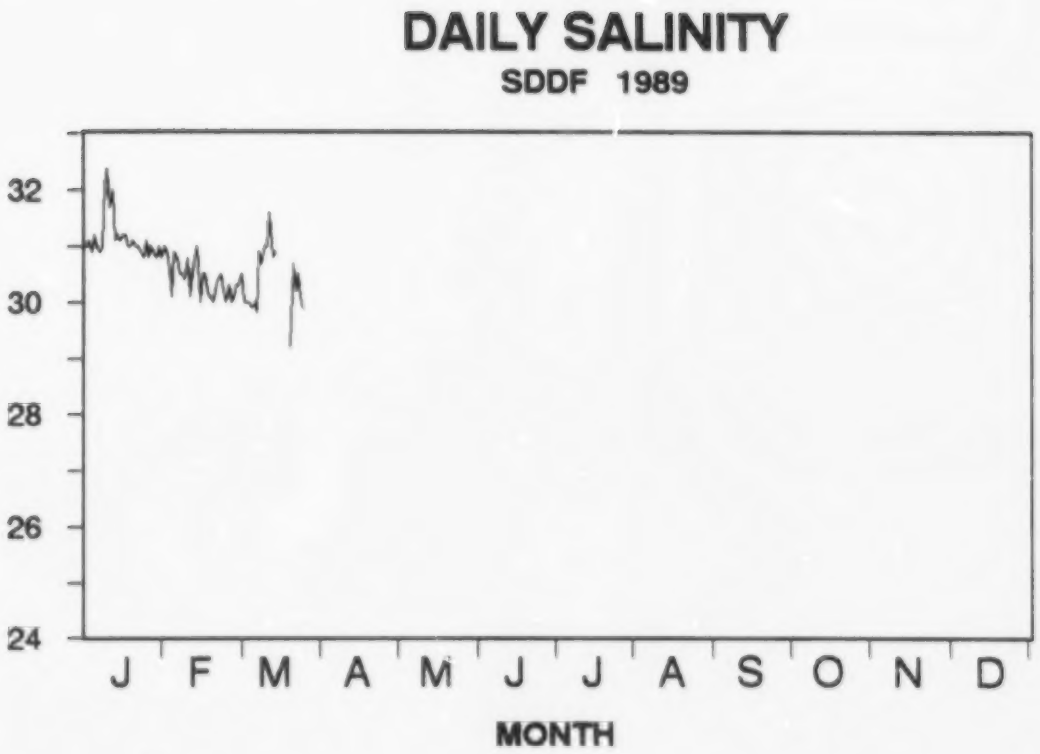

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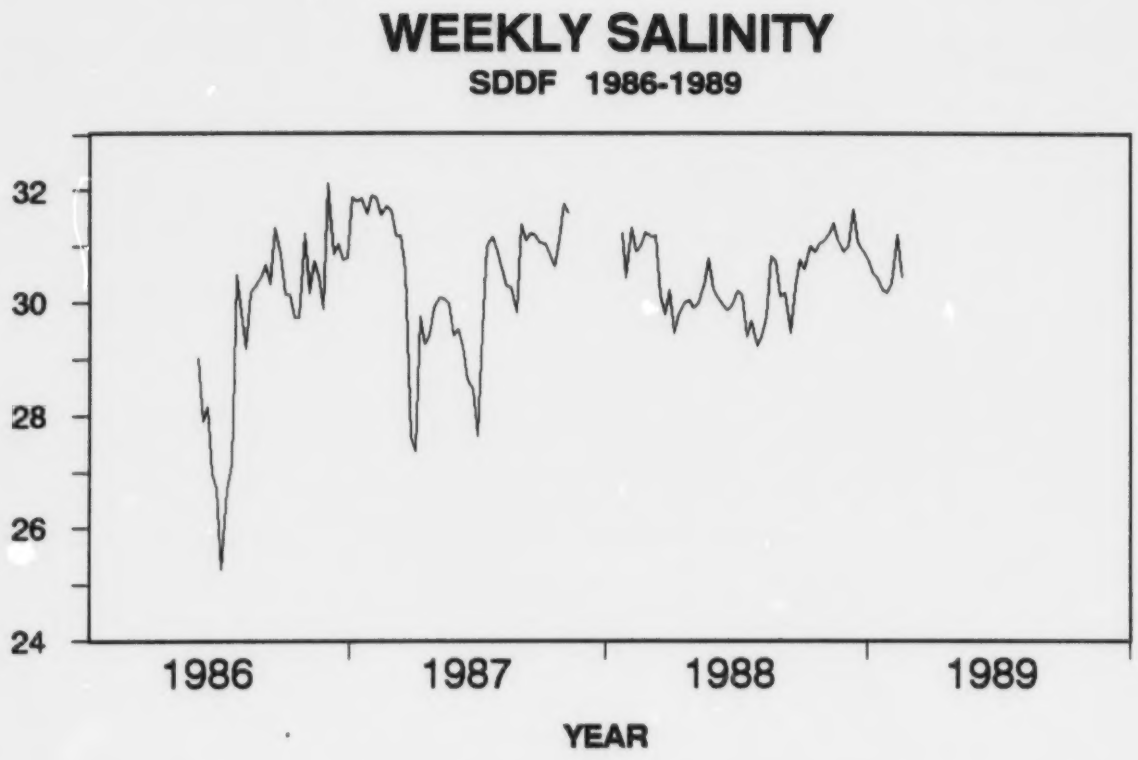

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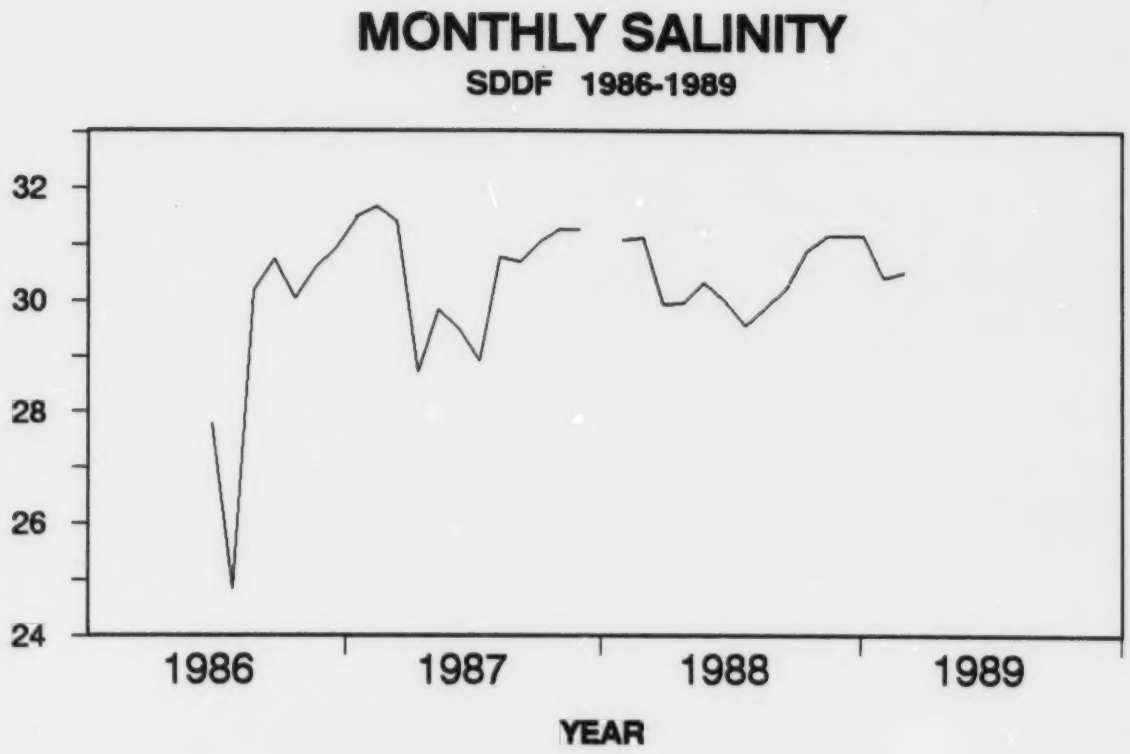

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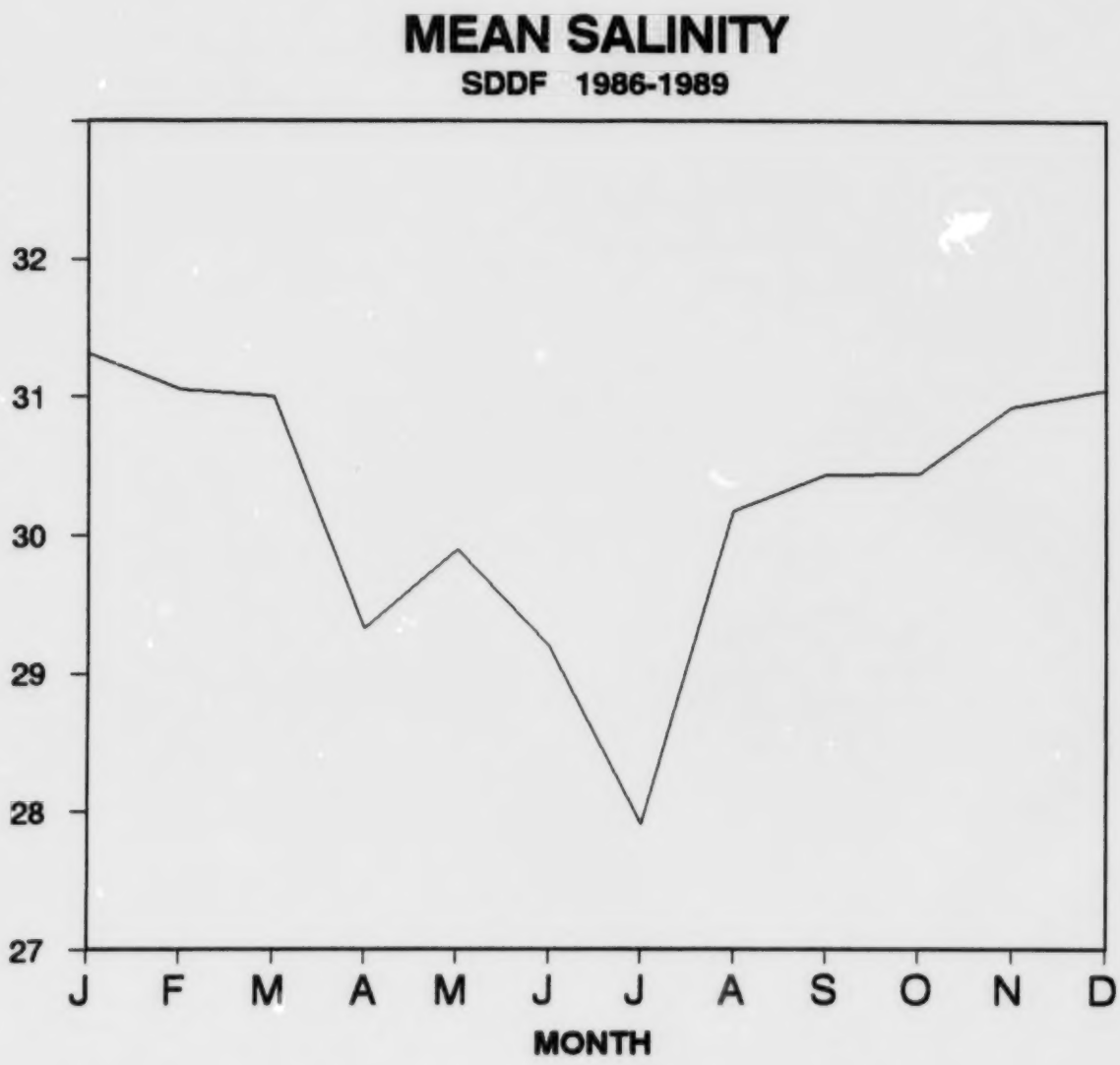

Figure 18. Mean Monthly Salinity for the period 1986-1989.

Table 1. Monthly mean water temperatures and salinities. Multi-year monthly average (M) and annual mean (A) are also listed.

Temperature (°C)													
Year\Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	A
1986						8.4	10.9	12.8	12.3	11.0	8.5	5.6	
1987	3.6	1.1	1.0	3.2	5.2	8.2	10.2	11.6	11.8	10.8	8.4	5.8	6.7
1988	2.8	1.5	2.2	3.9	6.2	8.6	10.6	12.0	11.6	10.3	8.7	5.6	7.0
1989	2.7	1.2	0.9	2.6	6.3	8.4	10.5	12.2	12.4	10.4	8.7	3.6	6.6
1990	2.2	1.1	1.5	3.0	5.6	8.2	10.8	13.1	12.5	10.9	7.9	5.8	6.9
1991	3.0	2.9	3.4	5.0	6.0	8.2	11.1	12.5	11.9	10.8	8.6	5.4	7.4
M	2.9	1.6	1.8	3.6	5.8	8.3	10.7	12.4	12.1	10.7	8.5	5.3	7.0

Salinity (p.s.u.)												
Year\Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986						27.8	24.8	30.2	30.8	30.0	30.6	31.0
1987	31.5	31.7	31.4	28.7	29.8	29.5	28.9	30.8	30.7	31.1	31.3	
1988		31.1	31.1	29.9	30.0	30.3	30.0	29.6	29.9	30.2	30.9	31.2
1989	31.1	30.4	30.5									
M	31.3	31.0	31.0	29.3	29.9	29.2	27.9	30.2	30.4	30.4	30.9	31.1

Table 2. Monthly water temperature anomalies for the period 1986-1991 relative to the means for the same period.

Monthly Temperature Anomalies												
Year\Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986						.1	.2	.4	.2	.3	.0	.3
1987	.7	-.5	0.8	-.4	-.6	-.1	-.5	-.8	-.3	.1	-.1	.5
1988	-.1	-.1	.4	.3	.5	.3	-.1	-.4	-.5	-.4	.2	.3
1989	-.2	-.4	-.9	-1.0	.5	.1	-.2	-.2	.3	-.3	.2	-1.7
1990	-.7	-.5	-.3	-.6	-.2	-.1	.1	.7	.4	.2	-.6	.6
1991	.1	1.3	1.6	1.4	.2	-.1	.4	.1	-.2	.1	.1	.1